

Proceedings of the
CAMBRIDGE PHILOSOPHICAL
SOCIETY

(MATHEMATICAL AND PHYSICAL SCIENCES)

VOLUME 53

PART 1

CAMBRIDGE UNIVERSITY PRESS
LONDON: BENTLEY HOUSE, N.W. 1
NEW YORK: 32 EAST 57TH STREET, 22

Price Thirty-five Shillings Net (U.S.A. \$6.00)

Subscription price per volume £6 net post free (\$20.00 in U.S.A.)

January 1957

CAMBRIDGE PHILOSOPHICAL SOCIETY

FOUNDED 1819; ROYAL CHARTER 1832

Session 1956–1957

President: F. J. W. ROUGHTON

Vice-Presidents: E. C. BATE-SMITH, F. P. BOWDEN, F. G. YOUNG

Treasurer: M. V. WILKES

Secretaries: (Mathematical) H. G. EGGLESTON

(Physical) T. E. FABER

(Biological) S. SMITH

The publications of the Society consist of the *Proceedings* and of the *Biological Reviews*. The publication of *Transactions* was suspended at the end of Volume XXII.

Orders should be sent to: THE MANAGER, CAMBRIDGE UNIVERSITY PRESS, BENTLEY HOUSE, 200 EUSTON ROAD, LONDON, N.W.1. Enquiries from the U.S.A. should be addressed to the Cambridge University Press, American Branch, 32 East 57th Street, New York 22, U.S.A.

For the purchase of early parts of the *Transactions*, *Proceedings* and *Biological Reviews* application should be made to the Secretaries. All parts of the *Proceedings* and *Biological Reviews* are available, and prices of sets or single parts will be quoted on application.

Fellows and Associates of the Society are particularly requested to inform the Secretaries of any change of postal address, and to send their subscriptions to the Treasurer, CAMBRIDGE PHILOSOPHICAL SOCIETY, FREE SCHOOL LANE, CAMBRIDGE.

All correspondence regarding library exchanges and Fellows' copies should be addressed to the Secretaries at the Society's office.

PROCEEDINGS of the CAMBRIDGE PHILOSOPHICAL SOCIETY

edited by

H. G. EGGLESTON

H. P. F. SWINNERTON-DYER

in consultation with

T. E. FABER
F. SMITHIES

D. R. HARTREE
F. URSELL

D. G. KENDALL
D. H. WILKINSON

1. Four parts of the *Proceedings* are issued each year.
2. Communications for the *Proceedings* should be sent to *The Librarian, Cambridge Philosophical Society, Free School Lane, Cambridge*. Papers by Fellows and Associates of the Society should be communicated directly by the author. Other papers must be communicated by a Fellow, who in doing so should give his opinion on the suitability of the paper for publication.
3. Papers occupying more than twenty pages of print can only very rarely be accepted.
4. It is recommended that each paper be prefaced by a short abstract. Copies of a *Guide for the Preparation of Synopses*, prepared by the Abstracting Services Consultative Committee and issued by the Royal Society, may be obtained from the Librarian.
5. Drawings for illustrations and diagrams should be on a large scale and on smooth white Bristol board in Indian ink.
6. References should be listed at the end of each paper, in alphabetical order of authors. World List abbreviations for titles of journals should be used.
7. Authors are particularly requested to prepare their manuscripts in a form suitable for printing, with adequate margins. A pamphlet on the preparation of papers may be obtained from the Librarian. If a large number of corrections are required in the proofs, the Council reserves the right to make a charge towards the cost.
8. Authors may receive, on request, fifty offprints of a paper in the *Proceedings* without charge.

ROYAL STATISTICAL SOCIETY

THE JOURNAL OF THE ROYAL STATISTICAL SOCIETY is published in two series: SERIES A (GENERAL), four issues a year, 15s. each part, annual subscription £3. 1s. post free; SERIES B (METHODOLOGICAL), two issues a year, 22s. 6d. each part, annual subscription 45s. 6d. post free.

Contents of Series B (Methodological), Vol. 18, Part 2, 1956

- Generalizations of Tchebycheff's Inequalities. By C. L. MALLOWS (with Discussion).
- Some Statistical Problems in Experimental Psychology. By VIOLET R. CANE (with Discussion).
- Generalized Hypergeometric Distributions. By C. D. KEMP and A. W. KEMP.
- New Tables of Behrens' Test of Significance. By R. A. FISHER and M. J. R. HEALY.
- Fiducial Distributions and Prior Distributions: An Example in which the Former cannot be associated with the Latter. By P. M. GRUNDY.
- Some Methods of Estimating the Parameters of Discrete Heterogeneous Populations. By J. E. FREUND.
- The Asymptotic Powers of Certain Tests based on Multiple Correlations. By E. J. HANNAN.
- Tests for Randomness in a Series of Events when the Alternative is a Trend. By D. J. BARTHOLOMEW.
- Regression Analysis of Relationships between Autocorrelated Time Series. By J. WISE.
- Expected Arc Length of a Gaussian Process on a Finite Interval. By IRWIN MILLER and JOHN E. FREUND.
- Analysis of Dispersion with Incomplete Observations on One of the Characters. By C. R. RAO.

Obtainable through any bookseller or direct from:

ROYAL STATISTICAL SOCIETY
21 BENTINCK STREET, LONDON, W. 1

THE INSTITUTION OF ELECTRICAL ENGINEERS

The JOURNAL

MONTHLY. Subjects of general interest, as apart from the specialised papers and discussions appearing in Parts "A" and "B" of the Proceedings, are treated in the monthly JOURNAL which is distributed free to members of the Institution but is also on sale to non-members.

The PROCEEDINGS

(Part "A")

Contains papers and discussions concerning the specialised spheres of power generation, transmission, meters and instruments... and applications of electricity. Published in February, April, June, August, October, and December.

The PROCEEDINGS

(Part "B")

Contains papers and discussions concerning the progress and developments in the fields of telecommunication, radio, electronics and the many allied interests. Published in January, March, May, July, September and November.

Office for Advertisements in the Publications

TERMINAL HOUSE, GROSVENOR GARDENS, LONDON, S.W. 1
SLOANE 7266

MONOGRAPHS OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS

NO. 1

Report on

A SURVEY OF TRAINING AND RESEARCH
IN APPLIED MATHEMATICS IN
THE UNITED STATES

*A Report by the National Research Council Committee
on Training and Research in
Applied Mathematics*

F. J. WEYL, Investigator

Copies are available at \$2.00 each from

SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS

Box 7541, Philadelphia 1, Pennsylvania, U.S.A.